

CITY OF ANNAPOLIS

2013 ANNUAL WATER QUALITY REPORT



Reporting Period January 1, 2013 to December 31, 2013

The City of Annapolis Department of Public Works is proud to serve the citizens of Annapolis and provide the best possible service. Whether producing and distributing high quality water, completing improvement projects on our infrastructure, upgrading meters, repairing potholes, repaving roads, repairing and installing sidewalks and signs, or collecting solid waste, we are committed to excellence and strive to protect and enhance our community.

Customer Service

Billing Questions (including high water bills) 410-263-7953
Emergency Hotline after hours and weekends 410-224-2140
Department of Public Works (8:00 am to 4:30 pm) 410-263-7949

Website

Visit our website at www.annapolis.gov for additional information. A PDF version of this report can be downloaded from our website.

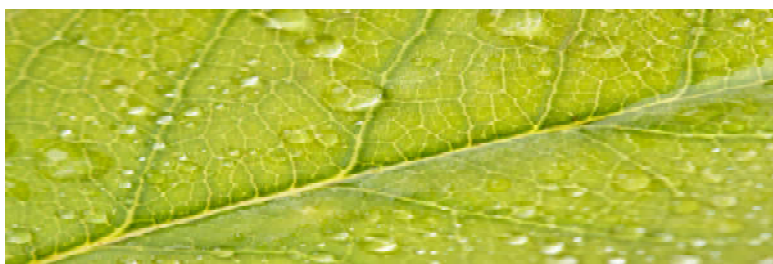
Questions about this Report

Please call the Water Plant Superintendent or Assistant Superintendent at 410-224-2140. Additional copies of this report may be obtained at the Department of Public Works Office, 145 Gorman Street, 2nd Floor.

This report is intended to inform you about the quality of water and service we deliver to you everyday. As regulations and standards change and new challenges face the drinking water industry, we will continue to adopt new and better methods to deliver the best quality drinking water to our customers in the most cost effective manner.

In 2013, the drinking water provided by the City of Annapolis met all health and safety regulations.

There were approximately 600 water quality samples collected within the City's water system, and approximately 3,000 analyses were performed for 110 various parameters. There were no water quality violations.



En Espanol: Este informe contiene information muy importante. Traduscalo o hable con un amigo quien

WATER QUALITY DATA 2013

The table below shows those constituents which were present at levels above the minimum detection limit but below the maximum contaminant level (MCL).

Contaminants	Maximum Contaminant Level		Avg	Level Detected	Sample Date	Violation	Sources of Contamination
	MCL	MCLG					
Inorganic							
Flouride (ppm)	4	4	n/a	0.870	Jan 2011	No	Erosion of natural deposits; water additive which promotes strong teeth.
Barium (ppm)	2	2	n/a	0.008	Apr 2011	No	Erosion of natural deposits; discharge of drilling wastes; discharge from metal refineries.
Copper (ppm)	AL=1.3	1.3	n/a	0.006	Jul 2011	No	Corrosion of household plumbing systems
Lead (ppb)	AL=15	0	n/a	0.000	Jul 2011	No	Corrosion of household plumbing systems
Radioactive							
Gross Beta (pCi/L)	50	0		3.000	May 2009	No	Erosion of natural deposits.
Strontium (ppb)	unregulated		43	39 ~ 47	Oct 2013	No	Erosion of natural deposits.
Metals							
Sodium (ppm)	n/a	n/a		3.480	Apr 2011	No	Naturally present in the environment.
Disinfection By-Products							
Total Trihalomethanes (ppb) STAGE 1	80	n/a	5.70	4.83 ~ 6.36	1st—3rd Quarters 2013	No	By-product of chlorinated organic matter.
Total Trihalomethanes (ppb) STAGE 2	80	n/a	4.22	1.32 ~ 8.47	4th Quarter 2013	No	By-product of chlorinated organic matter.
Total Haloacetic Acids (ppb) STAGE 1	60	n/a	0.00	ND	1st—3rd Quarters 2013	No	By-product of chlorinated organic matter.
Total Haloacetic Acids (ppb) STAGE 2	60	n/a	0.32	ND ~ 1.27	4th Quarter 2013	No	By-product of chlorinated organic matter.
Chlorate (ppb)	unregulated		200	170 ~ 230	Oct 2013	No	By-product of chlorinated organic matter.

On October 1, 2013, our system transitioned from Stage 1 Disinfection By products (DBP) Rule to Stage 2 DBP Rule. The Stage 2 DBP Rule has different monitoring and reporting requirements than Stage 1 DBP Rule. Stage 1 DBP data shown above (for Total Trihalomethanes and Haloacetic Acids), reflect the system-wide averages of each contaminant group, and the detected ranges for the system, from the first three quarters of 2013. The Stage 2 DBP data shown reflect the range of monitoring results from all Stage 2 monitoring locations from the fourth quarter of 2013. Subsequent consumer confidence reports will include only Stage 2 DBP Rule data.

Maximum Contaminant Level (MCL): Highest level of contaminant allowed in drinking water. MCLs are set as close to MCLGs as possible.

Maximum Contaminant Level Goal (MCLG): Level of contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Action Level (AL): Concentration of a contaminant which, if exceeded, triggers a treatment or other requirements which water systems must follow.

ppm: Parts per million (equivalent to milligrams per liter). ppb: Parts per billion (equivalent to micrograms per liter).

pCi/L: Picocuries per liter. ND: Non-detectable.

Information from EPA

As water travels over the land or underground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances and contaminants such as microbes, inorganic and organic chemicals, and radioactive substances. All drinking water, including bottled water, may reasonably be expected to contain at least very small amounts of some of these substances. It is important to remember that the presence of these substances does not necessarily pose a health risk. More information about contaminants and their potential health effects can be obtained via the Environmental Protection Agency's (EPA) Safe Drinking Water Hotline at 1-800-426-4791 or website at <http://www.epa.gov/ogwdw/hotline>.

Contaminants that may be present in source water include:

- Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

In 2003, the City and Anne Arundel County completed a study of the outcrop areas of the aquifers used in raw water sources at our Treatment Plant. The study concluded that there are no immediate threats to the raw water quality and little chance of any change to this condition in the future.

In 2013, the City was required by the Environmental Protection Agency to test for 21 additional unregulated contaminants. Two of the substances were detected, and are listed in the Water Quality Table. These substances are tested to determine whether there is a need for further testing or regulation.

City of Annapolis

Mike Pantelides | Mayor

Brian Woodward | Acting City Manager

City Council

Alderman Joe Budge	Ward One
Alderman Frederick M. Paone	Ward Two
Alderwoman Rhonda Pindell Charles	Ward Three
Alderwoman Shelia M. Finlayson	Ward Four
Alderman Jared Littmann	Ward Five
Alderman Kenneth A. Kirby	Ward Six
Alderman Ian Pfeiffer	Ward Seven
Alderman Ross H. Arnett, III	Ward Eight

Department of Public Works

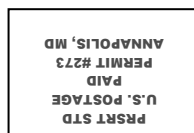
David Jarrell, P.E. | Director

James FitzGerald | Superintendent
Annapolis Water Treatment Plant

Citizens are welcome to attend City Council meetings for an opportunity to comment on legislation that may affect the quality of the drinking water. Meetings are held twice a month at 7:00 pm. Please refer to the schedule of meetings on the City Website at www.annapolis.gov. For a quick link, www.ci.annapolis.md.us/Government/Council/Docs/MeetingDates2014.pdf

Did you know?

- 3% of Earth's water is fresh water. 97% is salt water.
- Approximately 400 billion gallons of water are used in the United States each day.
- More than 25% of bottled water comes from municipal water systems, the same place tap water comes from.
- Since life began, we have had the same amount of water on the planet. The water from your faucet could contain molecules that dinosaurs drank.



City of Annapolis
Department of Public Works
145 Gorman Street, 2nd Floor
Annapolis, Maryland 21401



Help Protect Your Local Water System

Water Security is a shared responsibility involving water suppliers, wastewater utilities, government, law enforcement, and **citizens**. Citizens, businesses, and neighborhood watch groups are asked to report suspicious activity to the City.

Suspicious Activity could be:

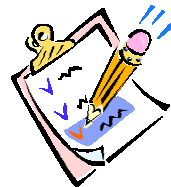
- Someone opening or connecting to a fire hydrant.
- Someone climbing or cutting a utility fence.
- Unidentified truck or car parked or loitering near pumping stations, fire hydrants, elevated water tanks, or facilities for no apparent reason.
- Someone on top of water tanks.
- Suspicious opening or tampering with manhole covers.
- Strangers hanging around locks or gates at treatment plants or towers.

Local drinking water and wastewater systems may be targets for terrorists or other would-be criminals wishing to disrupt and cause harm to your community water supplies or wastewater facilities. Water utilities are often located in isolated areas and cover large areas that are difficult to secure and patrol.

DO NOT confront strangers. Instead, report suspicious activity. During normal business hours, call Public Works at 410-263-7949 or, after hours/weekends, call 410-224-2140.

● **What information to provide when reporting to the City:**

- Take a picture.
- Write-down tag numbers and type of vehicle.
- A description of individuals.
- The date and time of activity.



Watch Your Water Use

Saving water also saves energy, which in turn reduces greenhouse gas emissions. It takes a lot of energy to treat the water to make it safe to drink and then to deliver it to your house. It takes even more energy to turn it into hot water. Did you know that letting your faucet run warm water for five minutes uses about as much energy as leaving a 60-watt light bulb on for 14 hours?

- **Be water-wise.** Turn the water off while brushing your teeth, and try taking shorter showers.
- **Fix that faucet.** A faucet that leaks at a rate of one drip per second can waste more than 3,000 gallons of water in a year.
- **Look for leaks.** If your toilet has a leak, you could be wasting 200 gallons of water a day. Try putting a drop of food coloring in the toilet tank. If the color shows up in the bowl without flushing, you have a leak!
- **Keep it cool.** Wash only full loads of laundry, and use cold water instead of hot. About 90 percent of the energy used for washing clothes is for heating the water.
- **Go low-flow.** Install water-efficient appliances and plumbing fixtures.
- **Watering the Lawn.** The typical single family suburban household uses at least 30 percent of their water for irrigation. Watering too much is just as harmful to your lawn and the environment as not watering.



Source: US EPA



Architectural rendering of new plant

The History — City of Annapolis Water Treatment Plant

The Annapolis Water Company was chartered in 1865 by the Maryland General Assembly after a fire at the State House in 1863. Disturbed by the lack of an adequate supply of water to fight the fire and concerns about the increased demand created by the Naval Academy, Maryland lawmakers ordered the creation of a company for the purpose of providing "pure, healthful water for all purposes." Waterworks began operation in 1866. It was designed by civil engineer William Rich Hutton, who had recently completed Washington aqueduct. Innovative concrete pipes that carried water into Annapolis. Prior to 1931, water was piped from the reservoir to man-made settling basins, then distributed from the pump house.

The property included and still exists today:



1880 circa Engineer residence



Reservoir and Dam



1907 Pump House

In 1912, Annapolis was one of the first water systems to add a filtration system. Maryland State Board of Health reported that Annapolis water was far superior to that of Maryland's largest City. In 1939 Annapolis drilled its first drinking water well and began mixing that with water from the reservoir.

The filtration building was built in 1929. This building is the main portion of our water treatment system and is still used today.



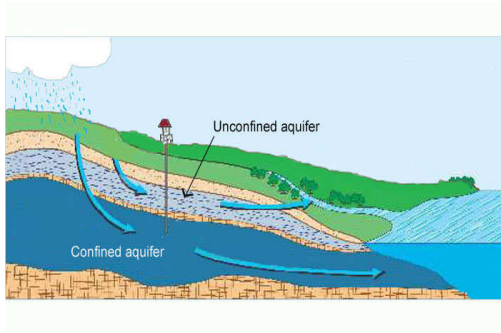
In 1985 during water distribution repair, we discovered some wooden water pipes that were used to carry water to City residents. We estimate that these pipes pre-date the civil war.

The NEW City of Annapolis Water Treatment Plant

In 2009, a comprehensive facility assessment indicated that the existing treatment plant is at the end of its useful life. The assessment noted that the plant has many critical pieces of equipment for which repair parts are unobtainable, and portions of the plant lack redundancy. Based on a 50 year life cycle cost analysis, the City concluded that the most cost effective and risk minimizing option is construction of a new facility.

In March 2013, the City awarded a contract for the design and construction of a new water treatment plant to be located adjacent to the existing plant. The design of the new plant is underway and is scheduled to be completed in early summer. Groundbreaking for the new plant will follow soon thereafter. The new plant is expected to be put into full operation in the late 2015.

Where does Annapolis' water come from?



The City of Annapolis' water supply originates from eight wells. These wells range from 250 to 1000 feet deep. The wells are drilled into three aquifers: Magothy, Upper Patapsco, and Lower Patapsco. The three aquifers are similar in water characteristics, and the water from each is treated in the same manner.

The City of Annapolis water treatment plant produces and delivers over 1.5 billion gallons of water each year to residents and businesses.

Lead and Copper Rule

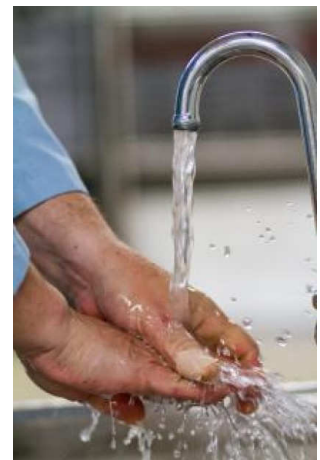
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water primarily comes from materials and components associated with service lines and home plumbing. The City of Annapolis is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing systems. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for at least 30 seconds before using water for drinking or cooking. If you are concerned about lead exposure in your drinking water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the EPA Safe Drinking Water Hotline at 1-800-426-4791 or at <http://www.epa.gov/safewater/lead>.



Vulnerable Populations

Some people are more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as people with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These individuals should seek advice about drinking water from their health providers. EPA/ Center for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

Cryptosporidium is a microscopic organism that is common in surface water. The organism comes from animal wastes in the watershed and is removed by a well-maintained water treatment process.



City of Annapolis' Water Treatment Process

Wells

Water is pumped from three underground aquifers.



Aeration

Once pumped out of the ground, water is passed through large aerators to add oxygen and remove dissolved gases.



Chemical Addition

Chlorine, lime, and alum are added to adjust the pH and disinfect the water.



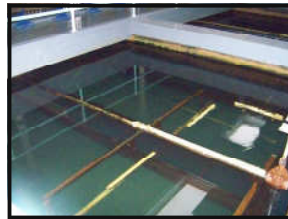
Fluoride Addition

Fluoride is added to the water to aid in the prevention of tooth decay.



Filtration

Filtration removes remaining suspended matter by passing the water through filter media.



Sedimentation Basins

Coagulation, flocculation, and sedimentation are processes that remove solid particles such as iron.



Clearwell

Storage of finished water prior to entering the distribution system.



Distribution System

After undergoing the treatment process, finished water enters the distribution system. It is delivered to 11,700 homes and businesses throughout the City of Annapolis. The water distribution system is comprised of 138 miles of water mains. In addition to water mains, the distribution system consists of fire hydrants, valves, elevated storage tanks, and various other components that allow for the finished water to be delivered to the City's homes and businesses.

